



inps journal

Indiana Native Plant Society

Winter 2023-2024

Road Trip on US 41: Visiting Indiana's Natural Areas

By John Bacone

US 41 is an old and famous US highway. This roadway, established in 1926, stretches from Miami, Florida to Michigan's Upper Peninsula. It enters Indiana near Evansville, and exits into Illinois from Hammond. By following this route, one can visit some of Indiana's premier nature preserves and natural areas, getting

an excellent glimpse into what the state looked like prior to settlement or, for that matter, when Charles Deam was studying the Indiana flora. If you give yourself about a week, you can spend quality time in southern swamps, hardwood forests, savannas, and prairies. For all the nature preserves discussed in this article visit the Department of Natural Resources website for more details (naturepreserves.dnr.in.gov).

Let's start our trip in southwest Indiana. You can spend the night in Evansville, or perhaps in historic New Harmony. The first day's natural areas include Twin Swamps. Visiting this preserve gives one a feeling of being in the deep south. Bald

cypress (*Taxodium distichum*) swamps once covered tens of thousands of acres in southwest Indiana, but today only a handful remain. Twin Swamps, located near Hovey Lake Fish and Wildlife Area, contains the best remaining bald cypress remnant, and it has excellent access via a boardwalk trail. The two swamps, in turn, are surrounded by an overcup oak (*Quercus lyrata*) swamp and a southern flatwoods natural community. Immediately to the west, a large cypress swamp adjoins Twin Swamps. While you are in the area, you can also explore other nature preserves: Wabash Lowlands and Section Six Flatwoods. These preserves do not have trail access, but visitors can meander through these southern terrace flatwoods and bottomland forests.



Paul Ratrock

Grave markers at Smith Cemetery peacefully coexist with native prairie that includes coneflower (*Echinacea cf. pallida*) and heath aster (*Symphyotrichum ericoides*).

If you have time, a visit to Harmonie State Park yields unexpected surprises. Wabash Border Nature Preserve contains a mature dry-mesic upland forest, mesic ravine forest, and wet floodplain forest bordering the Wabash River. Harmonie Hills Nature Preserve contains one of the largest tracts of mature mesic upland forest in the Southwestern Lowlands Natural Region. These community types contain a rich flora and fauna dependent upon large unfragmented forest ecosystems.

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Following your relaxing night spent either in New Harmony or Evansville, start your next day with a visit to Wesselman Woods. This old growth lowland forest of nearly 200 acres is of exceptionally high quality. The basal area of 187 square feet per acre is the highest known for any woods in Indiana. This is a southern-influenced woods, dominated by very large specimens of sweet gum (*Liquidambar styraciflua*), tulip tree (*Liriodendron tulipifera*), cherry-bark oak (*Quercus pagoda*), southern red oak (*Q. falcata*), and sugar-berry (*Celtis laevigata*). Wesselman Woods is one of the most impressive old growth forests remaining in Indiana – being in these woods is like being in a cathedral. Some of the trees found here are the largest of their species in Indiana. You enter the woods by first going through a first-rate nature center.

Road Trip – continued on page 2

Road Trip — continued from front

Hoosier Prairie Nature Preserve, viewed by Laura Rericha, Jerry Wilhelm, and John Bacone, was the first to receive controlled burns to maintain its diverse community of sun-loving plants.



Paul Rothrock

After leaving Wesselman Woods and Evansville on US 41, digress a bit to the east and pick up State Road 57. Near the town of Buckskin, you can visit another old growth woods, Hemmer Woods Nature Preserve. This 73-acre old-growth woods contains a portion of the forest which originally covered southwest Indiana. The upland portion supports oak-hickory forest, dominated primarily by white oak (*Q. alba*) and black oak (*Q. velutina*), and several species of hickory (*Carya* spp.).

The bottomland portion contains sweetgum, tulip tree, river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), and several oak species. Because of its high-quality natural communities, Hemmer Woods has been registered as a National Natural Landmark (NNL).

Next stop is Turkey Run State Park, located 10 miles north of Rockville. You can stay at the Turkey Run Inn, and make it your base for the next round of nature preserve visits. Rocky Hollow-Falls Canyon Nature Preserve, also a NNL, consists of the entire north half of Turkey Run State Park. At over 1600 acres, it is one of Indiana's largest nature preserves. Well-maintained trails allow visits to a suite of community types: floodplain forest, upland oak-hickory and beech-maple forests, and cliffs and canyons. The preserve has frontage on Sugar Creek, one of Indiana's highest quality rivers. Trails 5 and 9 allow you to hike through a boulder train where glaciers in the past rolled large blocks of granite.

If you have time, and aren't worn out from all your hiking, you can visit more of this wonderful terrain by visiting Sugar Creek Conservation Area. No trails have been established, but there is a parking area and visitors can explore without the large crowds one normally finds at Turkey Run. Please be advised that the area is primarily closed during turkey season, and is open for hunting of all game species. Wear orange if you decide to



*At Conrad Station Nature Preserve one can spot open grown white oak (*Quercus alba*) with massive, gnarled branches that reach close to ground-level.*

visit during deer season.

Our US 41 road trip continues from Turkey Run. Take time for a short diversion onto State Road 63. Near Perryville, you can visit a tiny prairie remnant, protected in Smith Cemetery Nature Preserve. Prairies once covered over 3 million acres in Indiana, including nearly a quarter of Vermillion County. Due to high fertility of prairie soils, most prairies have been converted to agricultural fields. Fortunately, in a few cases, when a small town was established, a church and cemetery were set aside before the prairie was plowed up. In the case of Smith Cemetery, botanists noticed prairie plants growing among the tombstones. The cemetery trustees agreed to cease mowing, and the prairie has recovered. The remnant prairie is managed by the Division of Nature Preserves as a living memorial to the early settlers who are buried there.

After visiting Smith Cemetery, return to US 41 and head north. Just north of Attica, you can head west towards the town of Fountain. There you will find another of Indiana's very special nature preserves, Portland Arch. Bear Creek flows through a deep ravine with high rock walls. It is joined by a small tributary stream that has carved an opening through the massive sandstone formation, creating a natural bridge known as Portland Arch. A few native white pines (*Pinus strobus*) are mixed in with the oak-hickory forest, a remnant population from earlier, cooler times. This rich botanical area was once a Boy Scout camp that was acquired by the Illinois chapter of The Nature Conservancy (TNC) and transferred to the Division of Nature Preserves. This wonderful area has the feel of a state park, but without the crowds of visitors. Portland Arch is also a designated NNL.

The next stop on the journey is Kankakee Sands/Willow Slough/Conrad Savanna Conservation Area. This complex is, among other things, a birder's paradise. Kankakee Sands is a huge prairie restoration managed by TNC. Several trails allow visitors to hike through the prairie and wetland restoration. A herd of bison is found on the property, and if you are lucky, you will see some. Kankakee Sands connects to Willow Slough Fish and Wildlife Area, which contains excellent remnants of dry

sand prairie, black oak sand savanna, pin oak flatwoods, and sedge marsh. Some of these can be found in Bill Barnes Nature Preserve. Beaver Lake Nature Preserve contains a 640-acre sand prairie remnant. While there are no trails, birders especially enjoy the large prairie landscape. Conrad Savanna and Conrad Station Nature Preserves are also found within this conservation complex. A trail leads visitors through Conrad Station.

Our journey now takes us into Lake County. Continue north on US 41, and cross the Kankakee River. You are now truly entering prairie country. The interesting plant species are no longer trees, but rather spectacular perennials. As you head north, you will start to drive onto the Valparaiso Moraine. Near the town of Cedar Lake, German Methodist Cemetery Prairie Nature Preserve sits on the back (east) side of the cemetery, which is located on the east (northbound) side of US 41. This one-acre prairie remnant is the highest quality black soil prairie remaining in Indiana. It survives because it was set aside as a cemetery prior to the prairie being plowed. Visitors can view the prairie from outside the perimeter fence, and will not be disappointed by the richness of the flora found there. It is dominated by prairie dropseed (*Sporobolus heterolepis*), and among the many other prairie plants found there are big bluestem (*Andropogon gerardii*), rattlesnake master (*Eryngium yuccifolium*; the INPS 2024 native plant of the year), shooting star (*Primula meadia*), leadplant (*Amorpha canescens*), compass plant (*Silphium laciniatum*), Michigan lily (*Lilium michiganense*), and downy gentian (*Gentiana puberulenta*).

Continue north on US 41 and turn east on Main Street heading towards Griffith. A parking lot can be found on the south side of Main Street, just east of Kennedy Avenue. This is Hoosier Prairie Nature Preserve. A trail enables visitors to hike through the large remnant prairie landscape once common in northwest Indiana. The nature preserve protects 580 acres of a rolling complex of black oak sand savanna, mesic prairie openings, sedge meadows, and cattail marshes. Hoosier Prairie is a NNL, and is within the authorized

boundaries of Indiana Dunes National Park. Nature Preserves staff maintain the prairie and savanna landscape using a combination of prescribed fire and mowing.

The final stops on this road trip will be to visit nature preserves located within the “dune and swale” region of Indiana. As the glaciers melted and Glacial Lake Chicago retreated, a series of approximately 88 ridges were formed that roughly parallel the Lake Michigan shoreline. Ridge Road is located on one of these ridges. Fortunately for us, several nature preserves have been established to protect the unique flora and fauna that occurs in these dune and swale complexes. Between each sand ridge, a “swale” containing wetland vegetation occurs. Sometimes it is a buttonbush (*Cephaelanthus occidentalis*) swamp, sometimes an open marsh, and sometimes open water. The closer one gets to Lake Michigan the shorter and more widely spaced the black oak trees on the ridges become. Gibson Woods Nature Preserve, located in Hammond, is owned by the Lake County Parks Department. This 120-acre tract contains the longest undissected dune ridge in Indiana outside of Indiana Dunes National Park. Visitors can enjoy the oak savanna, prairie openings, and wetlands by hiking on an excellent trail system.

Other dune and swale complexes have been protected by DNR, TNC, and the Shirley Heinze Land Trust. If your visit to Gibson Woods leaves you hungry for more, ask these organizations for directions and instructions to Ivanhoe, Ivanhoe South, Seidner, and Clark and Pine Nature Preserves.

Have a great road trip!

John Bacone, a member of the Central Chapter of INPS, is the retired Director of the Division of Nature Preserves. He has had a personal hand in acquisition and management of many of the preserves highlighted in this article!

Twin bald cypress trees are easily viewed from the boardwalk trail at Twin Swamps Nature Preserve, Posey County.



Paul Rothrock



Matthew Wyrick

*Gibson Woods preserves a precious piece of dune and swale vegetation in the near Lake Michigan region. The foreground has shallow water with sedges (*Carex* sp.) that quickly transitions to a low dune ridge with black oak (*Quercus velutina*).*

INPS Seeks to Address Diversity,

By the DEIJ Committee

In 2020 the Indiana Native Plant Society, along with conservation organizations across the nation, acknowledged that we have not done enough over the years to be inclusive – particularly in terms of age and ethnicity. As a result, our organization formed the Diversity, Equity, Inclusion, and Justice (DEIJ)

Committee to understand where we are, how we arrived here, and what actions can change the course of INPS. It was acknowledged that it will take many hands to adjust this course. And time. This is an update on some projects we have been working on, particularly in the INPS Central Chapter, where most of our current DEIJ committee resides and works. We would love to hear about additional efforts underway across the state in our various INPS chapters.



DEIJ Committee



ReGrowth volunteers planted and help maintain the Fountain Square Community Garden.

INPS Diversity Statement.

INPS welcomes all people to our organization. We are all an integral part of our natural world, and everyone has the right to enjoy interactions with nature and native plants.

- All people need to have the opportunity to be an active part of our mission, the “preservation, study, and use of plants native to Indiana” and INPS is working to reduce barriers so that every person can safely enjoy the outdoors.
- For INPS to perform its mission, it is

important that it be a diverse group. INPS will take measurable actions to increase the diversity of its membership to better reflect our society.

Measurable actions that we plan to implement include:

- Translation of the INPS Membership and Landscaping With Natives brochures into Spanish for posting on the website.
- Adding a more thorough explanation on the website as to why so many Asian plant species are invasive (due to similar climate zones and how the species behave here, not xenophobia).
- Adding new, broader audiences for publicity on grants, contests, and events.
- Adding questions to our member survey that help us better understand the demographics of our membership and seek ways to enhance the diversity of our members.
- Encouraging additional actions at the local chapter level.

Some 2023 highlights.

Our efforts this year have focused on native pollinator plantings, especially in conjunction with community gardens in historically under resourced and underserved communities. These include efforts at Lakeside Elementary School on the east side of Indianapolis, Fountain Square Community Garden, and the Chin Community Garden.

At Lakeside Elementary School, the DEIJ team and Landscaping with Natives team collaborated to design and help provide plants for a pollinator garden adjacent to the community garden. INPS member Faye Snodgress of Altrusa International of Indianapolis has coordinated the project and engaged the school community in caring for the site. Additionally, the INPS teams and Faye planted a sensory garden in the inner courtyard of the school. The garden consists of 175 native plants chosen for their auditory qualities (*Baptisia australis*, *Eragrostis spectabilis*, *Bouteloua curtipendula*), tactile qualities (*Eryngium yuccifolium*, *Sporobolus heterolepis*, *Antennaria neglecta*), visual

Equity, Inclusion, and Justice

qualities (*Liatris scariosa* var. *nieuwlandii*, *Sympyotrichum oblongifolium*, *Zizia aurea*, *Asclepias tuberosa*), and olfactory qualities (*Monarda fistulosa*, *Allium cernuum*, *Monarda bradburiana*, *Pycnanthemum verticillatum* var. *pilosum*). A grant from the INPS Central Chapter assisted this planting.

At Fountain Square the local gardeners believe in the power of community to help those in need. It is a place where neighbors can come together to grow fresh produce and share it with those who may not have access to healthy food, thus building a stronger, more nourished community. In 2022 the INPS DEIJ team joined Purdue Extension of Marion County to plan a native pollinator garden to help support the garden's produce. We identified beneficial species and Indy Urban Acres donated the original plants. In 2023 the gardeners expanded the pollinator garden. The same team designed the infill and expansion planting and sourced plants. They then worked with the ReGrowth team to provide educational programming and a planting party. For those unfamiliar with ReGrowth, this program of the not-for-profit Southeast Neighborhood Development Corp. serves young adults who have been involved in the justice system and trains participants in job skills, gardening, and community service. Find out more at <https://www.sendcdc.org/regrowth>. Excerpts of the planting day were shown at the 30th Anniversary Celebration at our INPS Annual Conference in Bloomington.

In 2021 the gardeners at the Chin Community Garden in South Indy added a native pollinator plot to their gardens. Our DEIJ team provided plants and planting assistance, as well as a bilingual workshop on the benefits of native plants to the garden. Purdue Extension of Marion County and the Indianapolis Library are now working on translating a garden guide into Burmese dialects to support this growing population of gardeners. These growers brought farming skills from their Burma homeland, but have had to adapt to the local climate and resources for successful harvest of produce.

Another INPS initiative involves a

partnership with the Eiteljorg Museum of American Indians and Western Art and Purdue Extension to plant native gardens. In 2020 the museum saw a need to restore gardens around the entry area. The INPS Landscaping with Natives team designed a series of native beds flanking the entrance and surrounding the Deer Fountain. Since the initial planting in 2021, monthly work parties have taken place from April through October, with occasional workshops on



DEIJ Committee

landscaping with natives. As the gardens fill in, the team seeks to develop programming around traditional uses of native plants. Our hope is to deepen our understanding of the history of the local indigenous community and their connection with the natural world. In so doing, perhaps we can to some degree emulate these original stewards.

The DEIJ Committee looks forward to new community garden partnerships in this coming year. Help us cement partnerships with Helpings of Hope, From the Ground Up Foods, The Mayor's Garden at Tibbs, the Native Peace Garden, and Newfields: A Place for Nature & the Arts. If you are interested in working with our team, please email diversity@indiananativeplants.org.

The DEIJ report was authored by Brooke Alford, Shawndra Miller, and Coralie Palmer. Other committee members include Nancy Stark, Greg Shaner, Esteban Coria, and Janice Gustafarro.

The Fountain Square Community Garden seen in an aerial view. The native pollinator area is at the right end of the garden.

Into the Twilight Zone

By Michael Homoya and
Paul Rothrock

Sporophytes of Appalachian filmy fern grow luxuriantly in a Perry County grotto. Here they reach 2-3 inches in length (still small compared to the 8 inches typical of southern states).

Those of us who fed on TV in the early 1960s vividly recall the Rod Serling series, "The Twilight Zone." It advanced a strange mix of science-fiction and drama that the younger generation still enjoys via YouTube®. Truth be told, southern Indiana has its own botanical twilight zone, "a middle ground between light and shadow." A strange world inhabited by three fern species. And as you "unlock this door with the key of imagination" you discover that these three species possess truly eerie lives.



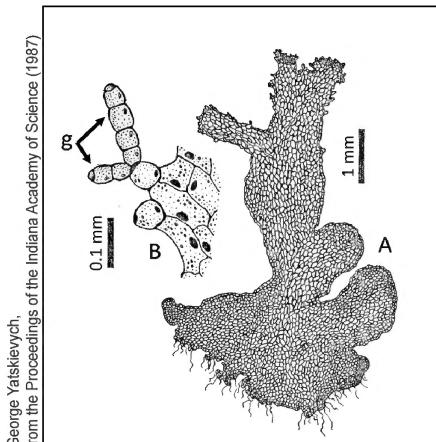
M. Homoya

These line drawings depict the gametophyte generation of the Appalachian shoestring fern.

A = the entire gametophyte, which is about 1/4 inch long.

B = an enlargement that shows the filamentous gemmae that may break off and grow into more gametophyte plants.

For some reason Indiana populations never give rise to sporophyte plants.



First, the place. Indiana's plant twilight zone exists in deep, sheltered grottoes beneath over-arching sandstone cliffs. Even during mid-day these grottoes are dimly lit, muted places, homes mostly to cave crickets, millipedes, and spiders. These scattered grottoes, hidden in Crawford, Martin, and Perry counties, generally are not favorable places for plants. However, this remarkable habitat harbors state endangered Appalachian filmy fern (*Vandenboschia boschiana*), Appalachian shoestring fern (*Vittaria appalachiana*), and weft fern (*Crepidomanes intricatum*). These species find refuge in these special well-controlled greenhouses that supply the right mix of light, humidity, and relatively uniform temperatures.

Of our fern trio, two species seem strange because each is "half" a fern. The half ferns are the Appalachian shoestring fern and the weft fern.

Half of one? To be clear, the bodies of these fern species are fully intact. But they live only half the life they should. Typical ferns live double lives, as two separate plants, in alternating generations. For example, picture in your mind a familiar Indiana fern species, perhaps maidenhair fern (*Adiantum pedatum*) or Christmas fern (*Polystichum acrostichoides*). The plant you picture is in a stage of its life that produces spores. Because it produces spores it's known as a sporophyte, literally "spore-plant."

Spores are tiny, dust-sized bodies that disperse into the environment to grow into the fern's "second" or alternate life known as a gametophyte. It's a separate plant and very different from the sporophyte.

Gametophytes come in a variety of shapes – many are thin, flat plantlets smaller than a fingernail, others are filaments of cells reminiscent of green algae. There are no hanging baskets made for these little ones, but they're still ferns! Regardless of their size or appearance, they serve an important role in fern reproduction.

The gametophyte is where male and female reproductive cells (sex cells, sperm and egg, or gametes) are formed. The union

of reproductive cells results in growth of a new sporophyte (remember, this is the fern body we know and love). With the creation of the sporophyte the reproductive cycle has come full circle – from a sporophyte, to a gametophyte, to another sporophyte. This is the fern's normal cycle that has occurred for countless generations.

But the Appalachian shoestring fern and weft fern are not "normal." For reasons unknown, they are "stuck" in the gametophyte stage, no longer capable of forming fully developed sporophytes. They no longer complete a sexual life cycle. Instead, held permanently in the twilight zone, they reproduce only by vegetative means, producing small vegetative fragments called "gemmae" that detach from the plant to grow into more gametophytes. It's somewhat comparable to using "eyes" of a potato to grow new potato plants.

Tucked away in these same rugged areas of Indiana are small populations of a third twilight zone species, the delicate Appalachian filmy fern. Named for the translucent, one-cell-thick leaf-blade of its sporophyte phase, one of the most bizarre things about the filmy fern is that it occurs in Indiana at all. In fact, the Indiana plants are often quite small and feeble for the species, exhibiting considerable dieback during weather extremes (the populations were almost wiped out during the winters shortly after the species was discovered in Indiana). The vast majority of the filmy fern family members (Hymenophyllaceae) occur in tropical rainforests. There, the ferns are mainly epiphytes, where they luxuriantly drape tree branches that are constantly bathed in the rainforest's relatively warm, moist air.

The primary range of the Appalachian filmy fern is centered in the southeastern U.S., with the greatest number of occurrences in the Cumberland Plateau. In Indiana, filmy fern was first discovered by Mark Swayne and his father Julius in 1977 in a sandstone grotto in Crawford County. Today seven populations are known in Indiana. One is large, spreading for over 10 feet.

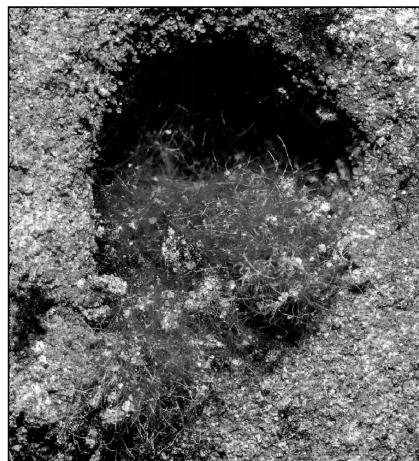
Our twilight zone ferns harbor many other secrets, including how they got to these isolated spots in the first place. How long have they survived the drama of Indiana's changing landscape and climate? Have they persisted there through ice-ages? Even Rod Serling, despite his searching the "dimensions of the mind," doesn't have the answers nor stranger stories!

Mike Homoya is past president of INPS and a member of the Central Chapter. Paul Rothrock helped with the writing of this article but sadly has never had the privilege of seeing these strange ferns in their habitat.

This grotto in Crawford County provides the protective habitat needed for filmy ferns.



M. Homoya



The delicate filaments growing in the rock crevice are the gametophyte generation of weft fern. These reproduce asexually by fragments known as gemmae. In typical ferns the gametophyte would reproduce sexually and give rise to a sporophyte generation.

Scott Namestnik

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To promote the appreciation, preservation, scientific study, and use of plants native to Indiana.

To teach people about their beauty, diversity, and importance to our environment.

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Annual Conference

Thank You

We thank the many sponsors who helped support the INPS Annual Conference and made it a success. Here are the five designated as Bur Oak Level sponsors.



CENTRAL INDIANA
LAND TRUST

Central Indiana Land Trust

For over 30 years, the Central Indiana Land Trust (CILTI) has preserved the best of Central Indiana's natural areas, protecting plants and animals, so Hoosiers can experience the wonder of the state's natural heritage (<https://conservingindiana.org/>). This year they added Fern Station to the state's protected places.



Eco Logic

Eco Logic LLC

Eco Logic LLC is an ecological restoration and green infrastructure firm founded in Bloomington Indiana in 1999 (<https://ecologicindiana.com/>). They focus on restoring natural areas and improving the sustainability of our urban environment, including bioswales, rain gardens, and pollinator habitat.



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Meristem, LLC is a full service environmental consulting firm that works throughout Indiana and many neighboring states (<https://sites.google.com/meristem.life/meristem/services>). In addition to their generous support of INPS, they donate 3% of all net profits to support persons with a disability or impediment to accessing the outdoors.



The Nature Conservancy

The Nature Conservancy of Indiana (TNC) has protected more than 100,000 acres in the state (<https://www.nature.org/en-us/about-us/where-we-work/united-states/indiana/>). Using science and collaboration, their human:nature campaign will have a profound impact on Indiana's future.



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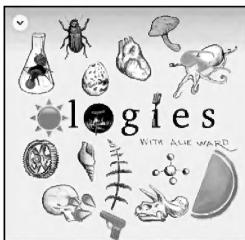
INPS is celebrating its 30th anniversary!

The anniversary video shown at the conference is available at

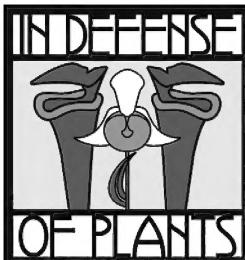
<https://www.youtube.com/watch?v=gbtWiqY8w68>.

Plant Phobia: The Green Wall

By Sidney Bunch



¹ alieward.com/ologies



² indefenseofplants.com



³ crimepaysbutbotanydoesn't.com



⁴ herbaria3.org



⁵ lab.plant-humanities.org

When you walk to work, go for a run, or even just sit on your porch, how often do you take the time to stop and really look at your surroundings? Not just the birds and squirrels, but also the weeds growing in the cracks on your sidewalk and the vine growing up your fence? For many native plant enthusiasts and botanists, this is less of an issue, but if you are among the majority of people affected by plant awareness disparity (PAD) – a term used to describe the lack of awareness to the many different species of plants around us in our day-to-day lives – then you aren't able to focus on the green world easily. PAD affects almost everyone to some degree and causes many people to look at a lawn or an open pasture and only see a daunting, vague green wall.

Every time we leave our house, we are surrounded by hundreds of different species of plants. Our attention seems immediately drawn to the bird that flew to the shrub, the butterfly flapping around our flowers, or the dog across the street. But when we start to ignore what's under our feet (or towering over our heads), we start to lose appreciation for the native biodiversity of the Midwest.

Plant awareness disparity is not easy to overcome. Staring at a green wall and being able to see and appreciate a small wild strawberry flower (*Fragaria virginiana*) as well as the large black cherry tree (*Prunus serotina*) is not an overnight fix. Being fully aware of our surroundings takes months – and sometimes even years. But luckily there are a multitude of podcasts and websites designed to help us learn about and appreciate the green world around us.

Ologies, hosted by Alie Ward¹, is perhaps the best science podcast that I have found. Ward covers a variety of specific and niche fields of science by interviewing world-renowned professionals. She has excellent plant-related episodes covering subjects like dendrology, cycadology, bryology, forensic ecology, and carnivorous phytobiology. Personally, *Ologies* is my favorite podcast because the episodes are aimed at listeners of all ages and educational backgrounds,

which leads to easy listening and fast learning of complex subjects.

Another beloved podcast of mine is *In Defense of Plants*, a podcast run by community ecologist Matt Candeias². Aimed at educating listeners over fascinating scientific concepts and discoveries in the world of botany, this podcast is engaging and extremely informative. From episodes over duckweed (*Lemna* spp.) microbiomes, to old growth grasslands, to growing plants on the moon, this podcast is captivating.

But if you prefer a more raunchy and personal approach to plants, *Crime Pays but Botany Doesn't*³ is a funny, witty, and sometimes off-color option. Naturalist Joey Santore, also known as Tony Santoro, is best known for his Italian-Chicago accent and humor. Santore does an amazing job of getting his audience engaged in his podcasts and videos while touching on important issues facing the plant world such as poaching, invasive species, and endangered plant conservation. One way that Santore accomplishes this is by interviewing botanists from around the world about their adventures. By the way, Santore's output pairs fittingly with our own Hoosier personality, the Mad Botanist (<https://www.themadbotanist.com/rant-of-the-month-1>).

Straying away from podcasts, the *Herbaria 3.0* website⁴ aims to address PAD and bring awareness to the beauty of plants through stories. Written by professors, graduate students, and botanists of all kinds, *Herbaria 3.0* hosts a multitude of beautiful articles, sharing reader-submitted personal memories and experiences that read almost like diary entries. Working in gardens and laboratories, studying botany in college, or working outside constantly can take away one's childlike wonder of the outdoors, but this website never fails to help me fall back in love with the natural world.

If you're looking for a more academic source, *The Plant Humanities Lab*⁵ is an incredibly informative website that takes deep dives into a variety of plants, crops, and herbs to explore their history and relationship with humans throughout the years. From

***Phobia* — continued at right**

And the Winner Is — Rattlesnake Master, INPS Native Plant of the Year, 2024

At the October 28th INPS Annual Conference, Mike Homoya announced that rattlesnake master (*Eryngium yuccifolium*) won the honors as INPS Native Plant of the Year for 2024. It joins a growing roster of outstanding plant species that embody the importance of native plant species and the mission of INPS.

Rattlesnake master is a member of the carrot family (Apiaceae), which includes anise root (*Osmorhiza longistylis*) and black snakeroot (*Sanicula* spp.) as well as some familiar non-native species such as Queen Anne's lace (*Daucus carota*) and poison hemlock (*Conium maculatum*). The Xerces Society website (Wheeler 2023) suggests that the common name reflects the use of the species medicinally by Native Americans, although the specific use on snakebites likely was supplied by pioneers.

This species is a pollinator magnet. *Flora of the Chicago Region* (Wilhelm & Rechka 2017) includes a long discussion on the butterfly, bee, and wasp species that visit. The Xerces Society celebrates rattlesnake master's role in supporting predatory wasps, insects that provide natural pest control.

For those of us more focused upon the beauty of plants, the foliage of rattlesnake master has an uncanny similarity to the leaves of yucca (*Yucca* spp.), a monocot in the Agave family. This similarity is reflected in the scientific name, *yuccifolium*. How may one account for parallel-veined, linear leaves in a dicot? Likely the organ we call "leaf" is derived from the petiole of the ancestral species and the genes for forming a leaf blade have been turned off. This, however, appears to be a question for ongoing research. Another unexpected trait of this species is the button-like shape of the flower clusters. Most species of the carrot family display flowers in umbrella-like arrays with each flower on a separate stalk. Rattlesnake master has dispensed with the stalks, except at the base of the inflorescence.

In Indiana, natural occurrences of rattlesnake master are mostly in wet to dry-mesic prairies in northwest and western areas of the state. The species performs

well, though, in prairie plantings and, as suggested by Wheeler (2023), could combine beautifully with blazingstar (*Liatris* spp.) or other composites (e.g., species of *Echinacea* and *Rudbeckia*) in your home landscape.

Enjoy this marvelous native plant throughout 2024 and beyond! And share it with others as you promote the mission of INPS.

The button-like flower clusters provide another common name for this species, button eryngo.

References

Wheeler, J. 2023. Weird and Wonderful Plants for Pollinators: Rattlesnake Master. xerces.org/blog/rattlesnake-master, accessed on Oct. 19, 2023.

Wilhelm, G. & L. Rechka. 2017. *Flora of the Chicago Region, a Floristic and Ecological Synthesis*. Indiana Academy of Science, Indianapolis.



Paul Rechka

Phobia — continued from left

articles exploring the spread of cacao (*Theobroma cacao*) to the discovery of the venus flytrap (*Dionaea muscipula*), this website is truly one of the best for history and botany fanatics alike.

My final recommendation for dispelling PAD in one's life is to go on a nature walk mapped out by an arboretum. There are many arboreta that offer websites with information about the plants you'll pass by on your walk. Some Indiana arboreta with virtually guided and in-person walking tours include the Crown Hill Cemetery in Indianapolis, the Purdue Arboretum in West Lafayette, the Gabis Arboretum in Valparaiso, the Ball State Arboretum in Muncie, the Cox Arboretum in Bloomington, the Hayes Arboretum in Richmond, and the William Halbrook Arboretum in Evansville.



Rattlesnake master has yucca-like leaves even though it is a dicot rather than a monocot.

Sidney Bunch is a student INPS member and an undergraduate at Purdue University where she is studying Plant Science and Horticulture in the class of 2025.

2023 INPS Photo Contest

By Greg Shaner

Several years ago the INPS photo contest was created to attract quality photographs of native plants, which could be used by the Society for both print and digital publications. Each year the contest consists of two categories. One is plant portraits, closeup shots of individual plants that show diagnostic details. The second category changes from year to year. For 2023, the category was woody plants.

We had 60 submissions in the plant portrait category and 31 submissions in the woody plant category. Lynne Tweedie assisted me in judging the entries and selecting winners from the many fine submissions.

Watch the INPS website for further announcements on the 2024 categories (<https://indiananativeplants.org/inps-sponsored-events/photo-contest>).

Greg Shaner is chair of the Photo Contest, has served 8 years on the INPS Board and Council as Secretary, and is a member of the West Central Chapter.

Plant Portrait Category



Phyllis Fenneman, first place for eastern shooting star (*Primula meadia*)



James Chenoweth, second place for American white water-lily (*Nymphaea odorata*)



Rene Stanley, third place for wisteria (*Wisteria sp.*)

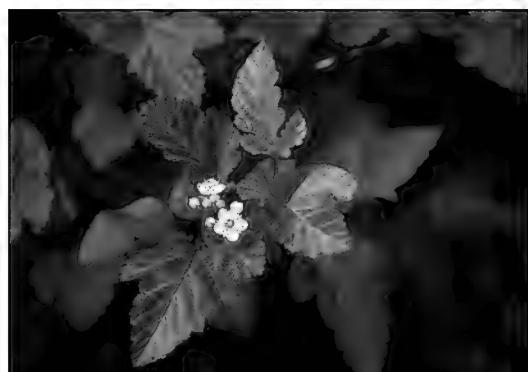
Woody Plant Category



Suzanne Atkinson, first place for Ohio buckeye (*Aesculus glabra*)



Rene Stanley, second place for shagbark hickory (*Carya ovata*)



Mary Doty, third place for ninebark (*Physocarpus opulifolius*)

Luscious Stems: Our 2023 Florathon Team

**By Veronica Bayles and
Brenda Haywood**

This is our first year as INPS members. Brenda and I are cousins, both retired, and we enjoy all things outdoors. We saw the 2023 Florathon invitation on the website and decided to form our team. We are small but mighty.

Since we live in the northern part of the state near the famously biodiverse Indiana Dunes, we made sure to include various compartments of that park in our quest for native plants in bloom. However, we also squeezed in several lesser-known preserves that have much to recommend.

Now for our team name: we searched online for a Florathon team name. The first listing came up as Luscious Stems. We laughed, found the name entertaining, and fittingly became the Luscious Stems.

Our quest began on April 30, 2023 at 6 a.m., taking us through three counties and five preserves. The weather that day included sunshine, rain, hail, and sleet – typical of the unpredictable spring weather in the Dunes area. We prepared well, though, and used the rain gear in our backpacks. Given the challenges of the weather, we were pleased to identify a total of 29 plants in bloom.

The itinerary began by heading north to Moraine Nature Preserve, Porter County. Our first flower of the day, the ever-fascinating Jack-in-the-pulpit (*Arisaema triphyllum*), was easy to spot. We identified five plants in bloom before moving to another Porter County preserve, Timothy Ritchie Preserve. It has an American beech (*Fagus grandifolia*)/sugar maple (*Acer saccharum*) woodland. The site was beautifully blanketed with white trillium (*Trillium grandiflorum*) and netted us seven native wildflowers in bloom.

The third stop, Paul H. Douglas Trail (aka Miller Woods), Lake County, is part of Indiana Dunes National Park. Nine species were identified; a few fun ones included pussytoes (*Antennaria parlinii*), wild lupine (*Lupinus perennis*), and bird's-foot violet (*Viola pedata*).

Next was Heron Rookery Trail, Porter County, which also is part of the Indiana

Dunes National Park. The trail follows along a portion of the Little Calumet River and includes wet bottomlands as well as Mnoke Prairie. Six additional species were in bloom here.

Our last stop of the day was Pinhook Bog Trail in LaPorte County. It too is part of the Indiana Dunes National Park. The Upland Trail has a rich beech and maple forest growing on top of a glacial moraine formed about 15,000 years ago. The woods had a plentiful golden ragwort (*Packera aurea*) population. We also observed the delicate rue anemone (*Thalictrum thalictroides*).

We finished our day at 5:45 pm with a well-deserved dinner since we didn't take time for lunch. We enjoyed the experience; we learned a lot; we encountered some of northern Indiana's most beautiful habitats. But most of all, we are excited for the 2024 Florathon and hope to expand our Luscious Stems team and our knowledge of Indiana native plants.

Veronica Bayles and Brenda Haywood are proud members of the North Chapter of INPS.

A selfie of Veronica and Brenda, the Luscious Stems team, snapped at their first preserve.



Veronica Bayles



The statuesque Jack-in-the-pulpit had first honors on the team's list

Start planning now!

**Florathon 2024:
April 13 - May 31**

For more info visit <https://indiananativeplants.org/inps-sponsored-events/florathon/>

Asian Jumping Worms:

By Brooke Alford

Asian jumping worms have been identified in Indiana! Southern Indiana has the largest documented population, but they have been found in several counties across the state, including Marion, Lake, and Porter.

These non-native, highly invasive earthworms live in shallow layers of organic soil and mulch.

It turns out that introductions in the U.S. may include at least three species of jumping worms (*Amyntas agrestis*, *A. tokionensis*, and *Metaphire hilgendorfi*) and further research is needed to determine whether their varying lifecycles require somewhat different control strategies. Regardless of the worm species, they quickly digest organic matter and replace it with their castings (worm poop), in

which all nutrients are bound up and made unavailable to plants. This new top layer is said to look like large coffee grounds. With nutrients no longer available, seed germination and plant development are greatly impaired. In the long term, this creates an environment that is more vulnerable to invasive plant establishment and reduces native plant vigor.

As we move toward spring, we gardeners must be cognizant of this new threat to healthy ecosystems. Once a site is invaded, it is not feasible to eradicate Asian jumping worms from soil, so the focus is on keeping them from moving to new areas. These worms do not travel far on their own but are spread predominantly through human interactions: through the transfer of soil, amendments like compost and mulch, and plant roots. Researchers are working on best practice recommendations to slow or eliminate the spread of the Asian jumping worms. As we look to our gardens to share plants, here are some important guidelines.

Scout for Asian jumping worms in your garden:

1. Learn to identify the worm. These worms are similar to our common earthworms but are more gray and brown and less pink. Their clitellum, the band of lighter-colored tissue near the head, is smooth, not raised like other earthworms, and whitish, not pink. They don't produce slime and tend to be drier than common earthworms and scaly. Their bodies are firmer, giving them the

ability to thrash around a lot when agitated. They sometimes release the tail end of their body as a defense mechanism.

2. Conduct a mustard test. Using a liquid "mustard pour" is a way to test for jumping worms. Mix $\frac{1}{3}$ cup of hot mustard powder into 1 gallon of water and pour half of the liquid slowly over a 1 ft² area of soil you want to test. Wait a few minutes and pour the rest. This will make any worms come to the surface. Identify, collect, and discard jumping worms if present. The mustard solution will not harm plants or kill the worms.

REMEMBER: This is a test for adult worms during the summer and early autumn (note: the adult worms all die after the first hard freeze) but does not aid in the detection of winter or spring season eggs and cocoons. You may not be aware of the presence of Asian jumping worms in your soil, but that does not mean they are not present. When potting up plants to share, you must take measures to prevent any possible spread of the worms, their eggs, or cocoons. The eggs and cocoons are at most 1 mm in size (the size of soil particles) and barely distinguishable to the human eye. Adults are most visible from June throughout the summer.

Prepare to safely share your plant divisions:

1. Bare-root your divisions. When dividing your plants, knock off the soil adhering to the roots. Then place the divisions in a bucket of water and continue to rinse until all soil is removed. If Asian jumping worms have been detected on your property, cover the bucket with a disposable paint filter before pouring out the water. This will capture and kill any worms that might be present, and you can dispose of them in the garbage.
2. Once thoroughly bare-rooted, pot the plants into a sterile potting medium. Make sure pots are clean of soil and any possible eggs or cocoons. If practical, a soilless medium is safest. Otherwise, be sure to use a trusted source of soil and compost. Ask your local dealers what they know about the prevention of transporting the Asian jumping worms in their products. For more detailed instructions see <https://extension.unh.edu/resource/plant-sales-and-jumping-worms>.
3. Store your potted divisions safely. The safest

— continued at right

Helen Phillips/Erin Cameron from
<https://canadianinvasives.ca/jumping-worms/>



The clitellum of Asian jumping worms is smooth and whitish, rather than pink.

Preventing Their Spread

method for storing your potted plants is on a sealed surface of plastic or concrete, or a platform elevated at least 16" above soil.

Resources

<https://www.purdue.edu/newsroom/releases/2023/Q1/gardeners-asked-to-be-vigilant-this-spring-for-invasive-jumping-worms.html>
<https://extension.umd.edu/resource/invasive-jumping-worms>
https://extension.unh.edu/sites/default/files/migrated_unmanaged_files/Resource007945_Rep11616.pdf
<https://extension.unh.edu/blog/2018/03/invasive-spot-light-jumping-worms>

Brooke Alford is an Urban Agriculture and Natural Resources Educator with the Marion County Purdue Extension and a member of the INPS Central Chapter.

Fern Station — continued from back

We approached the landowner, a nature-lover who has worked with us to put many acres under protection over the years. Unable to find a buyer, he had been considering dividing the land into parcels for sale. All this galvanized our staff and supporters to raise the remaining \$1 million. We closed on the property in May, ahead of schedule. Without the state funding and the incredible outpouring of support, the land might have ended up in a very different status—but the forest is safe forever.

As part of a larger forested block in Putnam County, these acres were pieced together over several years and owners before landing with CILTI. The preserve includes some early successional forest areas, but the majority is high-quality upland forest dominated by white oak (*Quercus alba*), American beech (*Fagus grandifolia*), and hickory (*Carya spp.*) dissected by lush ravines.

The wooded ravines support a wide variety of bryophytes and – true to the preserve's name – numerous ferns. At last count, Fern Station hosts at least 11 species of ferns. They include maidenhair (*Adiantum pedatum*), broad beech (*Phegopteris hexagonoptera*), fragile (*Cystopteris protrusa*), glade (*Homalosorus pycnocarpos*), sensitive (*Onoclea sensibilis*), Christmas (*Polystichum acrostichoides*), silvery

spleenwort (*Deparia acrostichoides*), and wood (*Dryopteris sp.*). Excitingly, CILTI received a joint grant from the Indiana Land Protection Alliance and the Indiana Academy of Science to fund bioinventory work at Fern Station. We are looking forward to having Scott Namestnik, state botanist and INPS member, conduct a full floristic inventory in 2024.

In terms of wildlife, Fern Station is a haven for woodland bird species, including wood thrush (*Hylocichla mustelina*), Acadian flycatcher (*Empidonax virescens*), and northern parula (*Setophaga americana*). Nearly 15 species of warblers nest within Fern Station's acreage. On recent visits, staff counted four state-endangered cerulean warblers (*S. cerulea*), as well as three pairs of nesting hooded warblers (*S. citrina*), one pair of nesting worm-eating warblers (*Helminthorus vermivorus*), and a red-shouldered hawk (*Buteo lineatus*). A high-density population of Kentucky warblers (*Geothlypis formosa*) further points to the richness of the habitat.

Our staff also found pine warblers (*S. pinus*), a possible county record, in mature eastern white pine (*Pinus strobus*) stands on the property. While not native to this part of the state, eastern white pines were planted by a landowner in the distant past as an erosion-control measure. Because of the pine warblers nesting there, the pines will stay.

Fern Station is just north of Fern Cliff Nature Preserve, a gorgeous preserve owned by The Nature Conservancy. CILTI's ultimate aspiration is to connect the two protected areas. Our team is developing a land management plan for the restoration and maintenance of this special place. Once that plan is complete, we will work toward opening the preserve to the public. Currently, it is open for arranged tours and events led by CILTI and our partners.

We are grateful to the Indiana Native Plant Society for generously supporting this project! Keep an eye on CILTI's social media and website, where you can sign up to receive our e-newsletter to be informed of our events and progress at Fern Station. For more information visit conservingindiana.org.

Shawndra Miller is Communications Manager for Central Indiana Land Trust and Secretary of the Board of INPS Central Chapter.



CILTI staff

True to its name, the ground layer in this area of the preserve is thick with ferns.



CILTI staff

Broad beech fern is one of at least 11 fern species observed at Fern Station.



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Fern Station: A Putnam County Gem Protected Forever

By Shawndra Miller

As fragmented as the landscape has become in Central Indiana, broad swaths of undisturbed nature are increasingly precious and rare. But Fern Station, nearly a square mile of contiguous mature forest, is just such a gem. It's a place where human-made sounds rarely intrude, where the native flora and fauna have ample space to thrive. And this spring, a large group of partners came together to protect this property forever.

The expansive forested block is located in the Illinoian glacial drift known as the Martinsville Hills. In less geological terms, it's just west of Greencastle in beautiful Putnam County. Broken only by a little-used gravel road, the land offers 570 acres of safe harbor for native plants and wildlife. It's no exaggeration to say that protecting this spectacular place was a distant dream – one that has now come true.

Central Indiana Land Trust, Inc. (CILTI) has a long history with this forest, starting in 2008. Walking the property with the landowner back then, our staff knew instantly that the land was nature preserve quality. But it would take a decade and a half to realize the dream of protecting this stunning natural area in perpetuity.

It also took an innovative state funding program and an enthusiastic response from supporters, including the Indiana Native Plant Society. Fern Station was the largest single land purchase in CILTI's 33-year history, in both size and dollars, and it came together in an incredibly short time.

We began actively working toward the dream in 2022. That's when Gov. Eric Holcomb's Next Level Conservation Trust infused \$25 million into land protection projects throughout the state. This three-to-one matching program awarded CILTI a \$3.1 million conservation grant toward purchase of Fern Station.



CILTI staff

The diverse topography and large intact forest makes Fern Station rich in native species of plants and wildlife.

Fern Station — continued on page 15